

amount of xenon gas for reducing burst and spiking phenomena caused during the burst operation while increasing energy output of the output pulsed laser light. --

DI -- 39. An excimer laser output stabilizing method according to claim 38, wherein an amount of gas mixture having the xenon gas supplied to the chamber is controlled so that the mixed gas in the laser chamber contains an amount 200 ppm or below of the xenon gas. --

REMARKS

In the foregoing amendments, claims 9-24 were canceled and claims 25-39 were added to the application. Claims 25-39 are the only claims pending in the application at this time. The new claims define an apparatus and method, *inter alia*, including a laser gas containing an effective amount of xenon gas for reducing burst and spiking phenomena caused during the burst operation while increasing energy output of the output pulsed laser light. The use of such an "effective amount" expression has long been recognized as acceptable in U.S. patent practice. *In re Halleck*, 164 USPQ 647, 57 CCPA 954 (CCPA 1970).

Applicant desires to express their thanks to Examiners Cornelius Jackson and Raul Ip for the courtesies extended to the undersigned in a

personal interview on October 29, 2002. During the interview, it was indicated that including more structure in the claims increases the chances for patentability. Various amendments to the claims were discussed during the interview. However, in the foregoing amendments, the claims were amended based upon a previous personal interview with the examiners on February 26, 2002, and a telephone interview with Examiner Raul Ip on April 1, 2002.

During the first interview, it was indicated that including more structure, such as a narrow-band making unit, in the claims had a better chance for patentability. In the telephone interview, it was indicated that the limitations in original claim 2 also have a good chance of patentability. The limitations of original claim 2 were directed to a xenon gas cylinder, a sensing means for detecting a concentration of the xenon gas added to the gas for excimer laser in the chamber, and a control means for controlling an amount of the xenon gas supplied from the xenon gas cylinder to the chamber based on the concentration of the xenon gas detected by the sensing means. These limitations, as well as additional limitations, were included in the foregoing amendments.

In section five of the Official action, claims 9-17 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Official action stated that claims 9-13 are incomplete, because they omit the essential structural cooperative relationships of

elements, and the omission amounts to a gap between the necessary structural connections. In particular, the examiner stated that the claims do not include a structural cooperative relationship between the connecting mechanism and the chamber in an excimer laser. The Official action continued that other omitted elements and structural cooperative relationships are the gas supply units, mirror(s), window(s), discharge electrodes, and the device(s) used to maintain the predetermined concentration of the mixture.

Applicant respectfully submits that new claims 25-39 particularly point out and distinctly claim the subject matter regarded as the invention within the meaning of 35 U.S.C. § 112, second paragraph.

Applicant respectfully submits that those persons skilled in the art would understand the conventional elements and their arrangements within an excimer laser, such as gas supplying units, mirrors, windows, discharge electrodes, etc. Therefore, applicant respectfully submits that these elements do not need to be set forth in the claim for a person of ordinary skill in the art to attach a particular and definite meaning to the claim.

In any event, in the foregoing amendments, the claims were rewritten to include essential structural cooperative relationships of elements of applicant's claimed invention, and structural cooperative relationships between the connecting mechanism and the chamber in an excimer laser. For example, applicant's new claims define structural cooperative relationships between the gas supply means or device, the narrow-band making unit for supplying pulsed

laser light having a narrow band to the chamber, mirror(s), discharge electrodes, and the device(s) used to maintain the predetermined or effective concentration of xenon gas in the gas mixture for the laser chamber.

For the foregoing reasons, applicant respectfully submits that claims 25-39 particularly point out and distinctly claim the subject matter regarded as the invention within the meaning of 35 U.S.C. § 112, second paragraph. Therefore, applicant respectfully requests that the examiner reconsider and withdraw this rejection.

Claims 14-17 were rejected under 35 U.S.C. § 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. § 101. Applicant respectfully submits that previously presented claims 14-17 defined the gas itself (composition claims), and not a method as alleged in the outstanding Office action. Therefore, it was not necessary for such claims to include process steps. In any event, new claims 25-39 do not include composition claims, nor any claims similar to claims 14-17. Accordingly, it is respectfully submitted that this rejection is now moot. Therefore, applicant respectfully requests that the examiner withdraw this rejection.

Claims 9-24 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,014,398 of Hofmann *et al.* (Hofmann). The statement of this rejection is set forth from the top of page 4 through the top of page 5 of the

Official action. Applicant respectfully submits that the teachings of Hoffmann do not disclose or suggests the invention as set forth in claims 25-39 within the meaning of 35 U.S.C. § 102 or 35 U.S.C. § 103.

The teachings of Hofmann propose at column 7, line 30, that "The energy is lower with Xe over the entire range." See Fig. 8B of Hoffman. This teaching in Hoffmann is opposite to the presently claimed invention. In particular, the present applicants have discovered that small amount of Xe gas, such as between 2 and 10 ppm, is effective for actually increase energy of the laser output. See Fig. 3 of the present application. This is surprising and unexpected in view of the aforesaid teachings of Hoffmann. All of the present claims in the application define either a method step or structure for controlling the concentration of xenon gas in the laser gas to an amount that effectively reduces the bursting and spiking phenomena in the pulsed laser output while also increasing energy of the pulsed laser output. Due to the fact that the teachings of Hoffmann teach that energy is lower over the entire xenon concentration range, applicant respectfully submits that it is impossible for the teachings of Hoffmann to motivate one of ordinary skill in the art to the invention as set forth in the present claims, where the concentration of xenon gas is controlled to increase energy of the pulsed laser output. Therefore, applicant respectfully submits that the presently claimed invention is distinguishable from the teachings of Hoffmann.

Furthermore, Hoffmann appears to be teaching controlling pulse energy stability by reducing the bursting phenomena. In order to reduce the bursting phenomenon, Hoffmann proposes that the energy of the laser output must also be reduced. Hoffmann has no comments concerning reducing the spike phenomenon, as set forth in the present claims. In summary, the teachings of Hoffmann propose reducing the bursting phenomena, not enhancing the bursting phenomena as in the present claims. The teachings of Hoffmann teach away from use of xenon gas to increase energy of the pulsed laser output, in contrast to applicant's claims. Finally, the teachings of Hoffmann are silent with respect to reducing the spike phenomenon, which is reduced by a method step or structure for controlling the concentration of xenon gas to an amount effective for reducing the spike phenomenon. For these reasons, applicant respectfully submits that the presently claimed invention is distinguishable from the teachings of Hoffmann. Therefore, applicant respectfully requests that the examiner reconsider and withdraw this rejection.

In the rejection, the Official action stated that Hofmann discloses sensing means 20 and control means 22. However, applicant respectfully submits that this is not correct. Item 20 in Hofmann is a wavemeter, not a sensing means. The applicant cannot find any discussion in Hofmann concerning a sensing means for detecting a concentration of the xenon gas added to the gas mixture in the chamber, or a step of detecting the concentration of the xenon gas added to the gas mixture in the chamber. Accordingly, applicant respectfully submits

that the present claims with these limitations are patentably distinguishable from the teachings of Hofmann.

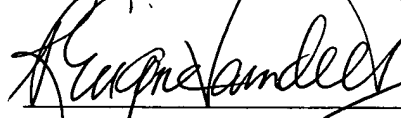
For the foregoing reasons, applicant respectfully submits that the teachings of Hoffmann cannot contemplate or suggest the invention as set forth in claims 25-39 within the meaning of 35 U.S.C. § 102 or 35 U.S.C. § 103.

Therefore, applicant respectfully requests that the examiner reconsider and withdraw any and all rejections of the claims set forth in the Official action mailed July 31, 2002, and allow all the claims present in the application.

In view of the foregoing amendment and remarks, favorable consideration and allowance of claims 25-39 are respectfully requested. While it is believed that the present the application is in condition for allowance, should the examiner have any comments or questions, it is respectfully requested that the undersigned be telephoned at the below-listed number to resolve any outstanding issues.

In the event this paper is not timely filed, applicant hereby petitions for an appropriate extension of time. The fee therefor, as well as any other fees which may become due, may be charged to our deposit account No. 22-0256.

Respectfully submitted,
VARNDELL & VARNDELL, PLLC
(formerly Varndell Legal Group)

A handwritten signature in black ink, appearing to read "R. Eugene Varndell, Jr.", is written over a horizontal line.

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